Notice of Allowability	Application No.	Applicant(s)	
	09/846,474	BASS, JAY K.	
	Examiner	Art Unit	
	Brian R. Gordon	1743	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *12-20-04*.

2. ☒ The allowed claim(s) is/are *1-38*.

3. ☒ The drawings filed on *4-30-01* are accepted by the Examiner.

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☐ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on March 04, 2004 has been entered.

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Bret Field on March 16, 2005.

The application has been amended as follows:

In the claims replace the claims with the amended claim set below:

1. (CURRENTLY AMENDED) A method of forming an addressable array of chemical moieties on a substrate, comprising:

(a) providing a substrate having multiple feature locations and multiple test locations;

(b) depositing a reagent drop set from a single dispenser onto each feature location so as to attach a corresponding moiety for each feature location, wherein said deposition of a reagent drop set is a cycle;

(c) repeating step (b) at each feature location until the addressable array is formed;

wherein for each feature location of said addressable array a multi-dispenser drop group is deposited thereon, wherein said multi-dispenser drop group is formed over two or more cycles of (b) and (c); and wherein said drops deposited in said two or more cycles are deposited from at least two or more different dispensers;

the method additionally comprising:

(d) depositing individual reagent drops of a previously formed multi-dispenser drop group from said different dispensers at respective, separate test locations on the substrate; wherein each of said separate test locations does not include a previously deposited drop; and

(e) detecting said individual reagent drops at said respective test locations

~~(a) for each feature location of said addressable array on the substrate, depositing a reagent drop set during a cycle so as to attach a corresponding moiety for that feature location; and~~

~~(b) repeating step (a) if required, until the addressable array is formed;~~

~~wherein, for each feature location of said addressable array, a multi-dispenser drop group is deposited onto said feature location, wherein said multi-dispenser drop includes drops which are deposited from different dispensers;~~

~~the method additionally comprising:~~

~~(c) depositing and detecting drops of said multi-dispsenser drop group from said different dispensers at respective separate test locations on the substrate, wherein each of said separate test locations does not include a previously deposited drop~~.

2. (CURRENTLY AMENDED) The ~~A~~ method according to claim 1 wherein drops of the multi-dispenser drop group in step (d) ~~(c)~~ are not independently detected at the corresponding feature location in step (b).

3. (CURRENTLY AMENDED) The ~~A~~ method according to claim 1 wherein a multi-dispenser drop group comprises a drop including an attachment moiety which becomes

attached at the feature location at which the drop is deposited in step (b) or (c) ~~(a) or (b)~~ but which does not become attached at a test location in step (d) ~~(c)~~.

4. (CURRENTLY AMENDED) The ~~A~~ method according to claim 1 wherein a multi-dispenser drop group comprises a drop including an attachment moiety which will become attached at the feature location at which the drop is deposited upon activation by an activator moiety, and at least one other drop comprises the activator moiety, such that the attachment moiety and activator moiety are deposited at separate test locations in step (d) ~~(c)~~.

5. (CURRENTLY AMENDED) The ~~A~~ method according to claim 1 wherein in (d) ~~(c)~~ drops are deposited and in (e) detected at respective separate test locations on the substrate from all those dispensers which deposit a multi-dispenser drop group.

6. (CURRENTLY AMENDED) The ~~A~~ method according to claim 2 wherein in step (e) ~~(c)~~ the drops are detected on the separate test locations on the substrate.

7. (CURRENTLY AMENDED) The ~~A~~ method according to claim 1, wherein step (e) additionally comprises~~ing~~ capturing an image of drops deposited during step (d) ~~(c)~~.

8. (CURRENTLY AMENDED) The ~~A~~ method according to claim 6 additionally comprising evaluating results from the detecting for an indication of a dispenser error and, when an error is detected, discarding the array or depositing further drops to correct the error.

9. (CURRENTLY AMENDED) The ~~A~~ method according to claim 6 additionally comprising saving results from the detecting in a memory.

10. (CURRENTLY AMENDED) The ~~A~~ method according to claim 6 additionally comprising evaluating results from the detecting based at least in part on at least one multi-dispenser group for ~~a cycle during~~ which the results were obtained.

11. (CURRENTLY AMENDED) The ~~A~~ method according to claim 10 wherein results from detecting ~~during~~ multiple dispenser groups ~~cycles~~ are obtained and the evaluation is based at least in part on the dispenser groups for ~~the cycles during~~ which the results were obtained.

12. (CURRENTLY AMENDED) The ~~A~~ method according to claim 2, ~~additionally comprising~~ wherein steps (d) and (e) are performed between two cycles and afterwards adjusting a parameter of the dispensing in step (b) or (c) ~~(a)~~ based at least in part on the results from step (e) ~~(c)~~.

13. (CURRENTLY AMENDED) The ~~A~~ method according to claim 1 wherein in step (d) ~~(c)~~ replicates of a same drop from a same dispenser are deposited at multiple different test locations on the substrate, the method additionally comprising evaluating a characteristic of the substrate based on the results of detecting the replicates.

14. (CURRENTLY AMENDED) The ~~A~~ method according to claim 1 additionally comprising evaluating dispenser performance based on relative characteristics of drops of different composition deposited from different dispensers.

15. (CURRENTLY AMENDED) The ~~A~~ method according to claim 1 wherein during step (b) or (c) ~~(a) or (b)~~ drops of multi-dispenser drop groups are deposited at respective substrate locations such that one drop of the group contacts a previously deposited drop of the same group at the same feature location.

16. (CURRENTLY AMENDED) The ~~A~~ method according to claim 2 wherein different multi-dispenser drop groups each have at least one drop deposited by a same

dispenser and another drop deposited by a different dispenser.

17. (CURRENTLY AMENDED) The ~~A~~ method according to claim 2 wherein the at least some of the drops of a multi-dispenser drop group are of a different composition.

18. (CURRENTLY AMENDED) The ~~A~~ method according to claim 2 wherein at least one of the drops of different multi-dispenser drop groups are deposited from a same dispenser.

19. (CURRENTLY AMENDED) A method according to claim 1 wherein different multi-dispenser drop groups are deposited at respective substrate feature locations in step (b) or (c) ~~(a) or (b)~~, and wherein the drops deposited in step (d) and detected in step (e) ~~(c)~~ are deposited in a test pattern area of said substrate separate from the array.

20. (CURRENTLY AMENDED) A method of forming an addressable array of chemical moieties on a substrate, comprising:

(a) providing a substrate having multiple feature locations and multiple test locations, where said multiple test locations are present in a test pattern area separate from the multiple feature locations;

(b) depositing a reagent drop set from a single dispenser onto each feature location so as to attach a corresponding moiety for each feature location, wherein said deposition of a reagent drop set is a cycle;

(c) repeating step (b) at each feature location until the addressable array is formed;

wherein for each feature location of said addressable array a multi-dispenser drop group is deposited thereon, wherein said multi-dispenser drop group is formed over two or more cycles of (b) and (c); and wherein said drops deposited in said two or more cycles are deposited from at least two or more different dispensers;

the method additionally comprising:

(d) depositing individual reagent drops of a previously formed multi-dispenser drop group from said different dispensers at respective, separate test locations on the substrate; wherein each of said separate test locations does not include a previously deposited drop; and

(e) detecting said individual reagent drops at said respective test locations

~~(a) for each feature location of said addressable array on the substrate, depositing a reagent drop set during a cycle so as to attach a corresponding moiety for that feature location; and~~

~~(b) repeating step (a) if required, until the addressable array is formed;~~

~~wherein, for each feature location of said addressable array, a multi-dispenser drop group is deposited onto said feature location, wherein said multi-dispenser drop includes drops which are deposited from different dispensers;~~

~~the method additionally comprising:~~

~~(c) depositing and detecting drops of said multi-dispenser drop group from said different dispensers onto the substrate at respective separate test locations in a test pattern area separate from the array, wherein each of said separate test locations does not include a previously deposited drop~~.

21. (CURRENTLY AMENDED) The ~~A~~ method according to claim 20 wherein a multi-dispenser drop group comprises a drop including an attachment moiety which becomes attached at the feature location at which the drop is deposited in step (b) or (c) ~~(a) or (b)~~ but which does not become attached at a test location in step (d) ~~(c)~~.

22. (CURRENTLY AMENDED) The ~~A~~ method according to claim 20 wherein a multi-dispenser drop group comprises a drop containing an attachment moiety which will become attached at that feature location upon activation by an activator moiety, and at least one other drop containing the activator moiety, such that the attachment moiety and activator moiety are deposited at separate test locations in step (d) ~~(c)~~.

23. (CURRENTLY AMENDED) The ~~A~~ method according to claim 22 wherein in step (d) ~~(c)~~no activator containing drop is deposited at a same test location as an attachment moiety containing drop.

24. (CURRENTLY AMENDED) The ~~A~~ method according to claim 22 wherein different multi-dispenser drop groups are deposited at respective substrate feature locations in step (b) or (c) ~~(a) or (b)~~, and wherein drops from dispensers which deposit different multi-dispenser drop groups are deposited and detected, respectively in steps (d) and (e) ~~(c)~~in a test pattern area separate from the array.

25. (CURRENTLY AMENDED) A method of forming an addressable array of polymers on a substrate, comprising:

(a) providing a substrate having multiple feature locations and multiple test locations;

(b) depositing a reagent drop set from a single dispenser onto each feature location so as to attach a monomeric unit of the corresponding polymer for each feature location, wherein said deposition of a reagent drop set is a cycle;

(c) repeating step (b) at each feature location until the addressable array is formed;

wherein for each feature location of said addressable array a multi-dispenser drop group is deposited thereon, wherein said multi-dispenser drop group is formed over two or more cycles of (b) and (c); and wherein said drops deposited in said two or more cycles are deposited from at least two or more different dispensers;

the method additionally comprising:

(d) depositing individual reagent drops of a previously formed multi-dispenser drop group from said different dispensers at respective, separate test locations on the substrate; wherein each of said separate test locations does not include a previously deposited drop; and

(e) detecting said individual reagent drops at said respective test locations

~~(a) for each feature location of said addressable array on the substrate, depositing a reagent drop set during a cycle so as to attach a monomeric unit of the corresponding polymer for that feature location; and~~

~~(b) repeating step (a), until the addressable array is formed;~~

~~wherein, for each feature location of said addressable array, a multi-dispenser drop group is deposited onto said feature location, wherein said multi-dispenser drop group includes drops which are deposited from different dispensers;~~

~~the method additionally comprising:~~

~~(c) depositing and detecting drops of said multi-dispenser drop group from said different dispenser at respective separate test locations on the substrate, wherein each of said separate test locations does not include a previously deposited drop~~.

26. (CURRENTLY AMENDED) The ~~A~~ method according to claim 25 wherein a multi-dispenser drop group comprises a drop including an attachment moiety which becomes attached at the feature location at which the drop is deposited in step (b) or (c) ~~(a) or (b)~~ but which does not become attached at a test location in step (d) ~~(c)~~.

27. (CURRENTLY AMENDED) The ~~A~~ method according to claim 25 wherein the polymers are biopolymers.

28. (CURRENTLY AMENDED) The ~~A~~ method according to claim 27 wherein a multi-dispenser drop group deposited during a cycle comprises a drop including the monomeric unit which will become attached at that feature location upon activation by an activator moiety, and at least one other drop comprises the activator moiety, such that the monomeric unit and activator moiety are deposited at separate test locations in step (d) ~~(c)~~.

29. (CURRENTLY AMENDED) The ~~A~~ method according to claim 25 wherein steps (d) and (e) are ~~(c) is~~ performed between two cycles.

30. (CURRENTLY AMENDED) The ~~A~~ method according to claim 25 wherein steps (d) and (e) are ~~(c) is~~ performed between two cycles, and performed again between another two cycles.

31. (CURRENTLY AMENDED) The ~~A~~ method according to claim 25 wherein drops are deposited and detected at respective separate test locations on the substrate from all those dispensers which deposit a multi-dispenser drop group.

32. (CURRENTLY AMENDED) The ~~A~~ method according to claim 25 wherein in step (e) ~~(c)~~the drops are detected on the substrate.

33. (CURRENTLY AMENDED) The ~~A~~ method according to claim 25, wherein step (e) additionally comprises~~ing~~ capturing an image of drops deposited during step (d) ~~(c)~~.

34. (CURRENTLY AMENDED) The ~~A~~ method according to claim 28 wherein step (d) and e are ~~(c) is~~ performed between two cycles, the method additionally comprising when an error in a monomeric unit or activator drop dispenser is detected then depositing further drops containing the monomeric unit or activator moiety so as to correct the error.

35. (CURRENTLY AMENDED) The ~~A~~ method according to claim 26 wherein during step (b) or (c) ~~(a) or (b)~~ drops of multi-dispenser drop groups are deposited at respective substrate feature locations such that one drop of the group contacts a previously deposited drop of the same group at the same feature location.

36. (CURRENTLY AMENDED) The ~~A~~ method according to claim 28 wherein the activator containing drop for multiple feature locations is deposited from a same dispenser.

37. (CURRENTLY AMENDED) The ~~A~~ method according to claim 25 wherein different multi-dispenser drop groups are deposited at respective substrate feature locations in step (b) or (c) ~~(a) or (b)~~, and wherein the drops deposited in step (d) and detected in step (e) ~~(c)~~ are deposited in a test pattern area separate from the array.

38. (CURRENTLY AMENDED) A method of forming multiple addressable arrays of chemical moieties on a substrate, comprising for each array:

(a) providing a substrate having multiple feature locations and multiple test locations;

(b) depositing a reagent drop set from a single dispenser onto each feature location so as to attach a monomeric unit of the corresponding polymer for each feature location, wherein said deposition of a reagent drop set is a cycle;

(c) repeating step (b) at each feature location until the addressable array is formed;

wherein for each feature location of said addressable array a multi-dispenser drop group is deposited thereon, wherein said multi-dispenser drop group is formed over two or more cycles of (b) and (c); and wherein said drops deposited in said two or more cycles are deposited from at least two or more different dispensers;

the method additionally comprising:

(d) depositing individual reagent drops of a previously formed multi-dispenser drop group from said different dispensers at respective, separate test locations on the substrate; wherein each of said separate test locations does not include a previously deposited drop and wherein the drops are deposited at a separate test pattern area between arrays with the number of test locations of the test pattern area being less than one tenth the number of feature locations in the smallest of the arrays which the test pattern area is between; and

(e) detecting said individual reagent drops at said respective test locations

~~(a) for each of multiple feature locations on the substrate, depositing a reagent drop set during a cycle so as to attach a corresponding moiety for that feature location; and~~

~~(b) repeating step (a) if required, until the addressable array is formed;~~

~~wherein multiple dispensers are used over one or more cycles of (a) and (b) to dispense drops to form the array, the method additionally comprising:~~

~~(c) depositing and detecting drops of said reagent drop set from the different dispensers at respective separate test locations on the substrate, wherein the drops are deposited at a separate test pattern area between arrays with the number of test locations of the test pattern area during any one cycle being less than one tenth the number of feature locations in the smallest of the arrays which the test pattern area is between~~.

39. (CURRENTLY AMENDED) The ~~A~~ method according to claim 38 wherein the number of test locations of the test pattern area ~~during any one cycle~~ is not greater than ten times the number of the dispensers used to form an array ~~during any one cycle~~.

Claims 40-58 (Canceled).

Allowable Subject Matter

2. Claims 1-39 are allowed.

3. The following is an examiner's statement of reasons for allowance: The prior art of record does not teach nor fairly suggest a method of forming an addressable array of chemical moieties on a substrate, comprising: (a) providing a substrate having multiple feature locations and multiple test locations; (b) depositing a reagent drop set from a single dispenser onto each feature location so as to attach a corresponding moiety for each feature location, wherein said deposition of a reagent drop set is a cycle; (c) repeating step (b) at each feature location until the addressable array is formed; wherein for each feature location of said addressable array a multi-dispenser drop

group is deposited thereon, wherein said multi-dispenser drop group is formed over two or more cycles of (b) and (c); and wherein said drops deposited in said two or more cycles are deposited from at least two or more different dispensers; the method additionally comprising: (d) depositing individual reagent drops of a previously formed multi-dispenser drop group from said different dispensers at respective, separate test locations on the substrate; wherein each of said separate test locations does not include a previously deposited drop; and (e) detecting said individual reagent drops at said respective test locations.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Stocscheck, Bushway et al., Mutz et al., Idermuhle et al., Himmelhause et al., Bruce et al., Eigen et al., Churchill et al., Chiou et al., Bass and Dahm et al. disclose array fabrication devices.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian R. Gordon whose telephone number is 571-272-1258. The examiner can normally be reached on M-F, with 2nd and 4th F off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on 571-272-1267. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

brg

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